Ex. 5 Deliberative Process (DP)

Issue 25. Q3 2016

Presidential Profile Featured in The "Zweig Letter"

John Bierschenk, President and Co-founder of TerraTherm was recently featured in an issue of The Zweig Letter, a management newsletter for A/E and environmental services firm leaders.

Here are some highlights from the interview:

TZL: What is your vision for the future of TerraTherm?
JB: To continue growing to fill the increasing demands of our technologies and services, worldwide. Our thermal technologies have proven able to restore grossly contaminated properties to near pristine condition. I also see TerraTherm continuing to research, develop, and evolve to reach new heights in the thermal industry through thought leadership

TZL: Tell me about a recent project you are especially proud of and why.
JB: We recently completed the largest thermal project in the world treating more than 400,000 cubic yards of jet fuel contamination to a depth of 275 feet below ground surface and removed and treated more than two million pounds of mass.

TZL: How have you seen TerraTherm evolve since its founding?
JB: Based in north central Massachusetts, we began as a company of two, and are now a company of roughly 80 professionals working across the country. Additionally, we now have a world-wide reach, with subsidiaries in Japan, China, and Denmark. We have expanded our suite of technologies and services to the point where we are now the only thermal vendor in the remediation industry to offer all three of the most mainstream and widely accepted methods of thermal remediation.

- Thermal conductive heating, which is a heating approach used in both ISTD and in its above-ground cousin technology.
- Electrical Resistance Heating.
- Steam enhanced extraction.

After TerraTherm's recent acquisition of Current Environmental Solutions, the firm is now able to offer electrical resistance heating, Bierschenk says.

TZL: How would you describe your leadership style?
JB: Lead by example and management by walking around and talking to people. I often ask employees about their jobs, listen to their feedback, and show empathy. Additionally, I ask high-performers to step up and accept new challenges.

TZL: You were recently acquired by Cascade Technical Services. How has that affected TerraTherm? Has your role changed at all?
JB: Being part of CTS has broadened our geographical reach and depth of resources greatly. We are now able to offer our clients more than just thermal remediation: We can provide turnkey high resolution site characterization, along with chemical oxidation, and bioremediation as integrated site solutions.

Click here to read the full article.

TerraTherm to Perform Remediation at Former General Motors Plant 7 Site

TerraTherm Inc. has been selected to perform the remediation of a chlorinated solvent source area associated with the former General Motors Plant 7 site in Anderson, IN. The Anderson Redevelopment Commission and the United States Environmental Protection Agency selected Electrical Resistive Heating (ERH) technology to remediate the chlorinated solvent source area at the site. TerraTherm is working under subcontract for St. John- Mittelhauser & Associates. The site, formerly known as the Delco Remy plant, was constructed in 1940 and manufactured horns, turn signals, starter motors, etc.

TerraTherm's Newly Acquired GPS Surveying Tool Increases Ability and Accuracy

The future has arrived for TerraTherm and the timing couldn't be better. With the recent acquisition of the Leica Global Positioning Satellite (GPS) surveying tool, TerraTherm has increased its ability to accurately survey its awarded sites by either surveying in native locations or staking out locations from data uploaded to the GPS tool directly from our Civil 3D software. Although some jobs sites may require a Licensed Land Surveyor (LLS), others that do not, will allow TerraTherm to quickly and accurately locate all required well locations, building structures, and other pertinent site features to the nearest centimeter, both horizontally and vertically.

At a recently awarded site, TerraTherm was able to put our new GPS to the test. On the first week

of August 2016, a two day survey effort was conducted on over 400 well locations, and the outcome was a success. The site was first designed using Civil3D to accurately identify the most efficient layout for membrane interface probes, heaters, dual-phase soil vapor extraction wells and temperature monitoring points electronically. Then, the X-Y coordinate locations were uploaded to the GPS unit and were staked out using the GPS rover utilizing the Real Time Kinematic (RTK). RTK is a technique used to enhance the precision of position data derived from satellite-based positioning systems that relies on a single reference station or interpolated virtual station to provide real-time corrections, providing up to centimeter-level accuracy. This was an exciting first use of the tool because of the team effort involved. Once staked out, Cascade's drillers were able to drill in the precise location set by the GPS. If an obstruction called for a new well location an as-drilled point was surveyed in, the data was collected, and changes were immediately made to the CAD layout.

If you are interested in learning more about this contact us at info@terratherm.com

Upcoming Events

32nd Annual International Conference on Soils, Sediments, Water, and Energy

October 17-20, 2016
Amherst, Massachusetts
Registration

The Annual Conference on Soils, Sediments, Water and Energy has become the preeminent national conference in this important environmental area. The conference attracts 600-800 attendees annually which includes a wide variety of representation from state and federal agencies, military, industry (including railroad, petroleum, transportation, and utilities), environmental engineering and consulting, and academia.

Remediation Tools for Challenging Geology - Cutting Edge Technology for Cleanups in Clay & Fractured Bedrock

October 18, 2016
6:30 pm - 9:30 pm

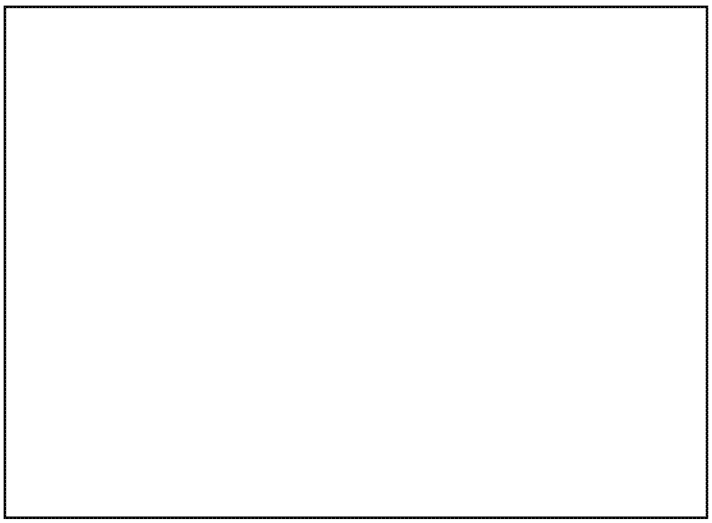
William Slack, Ph.D., PE, FRx, Inc.
Leah MacKinnon, P. Eng., Geosyntec Consultants, Inc.
Steffen Griepke, TerraTherm, Inc.
James Wang, PhD, PE, Geosyntec Consultants, Inc.
Chapman Ross, PE, Geosyntec Consultants, Inc.

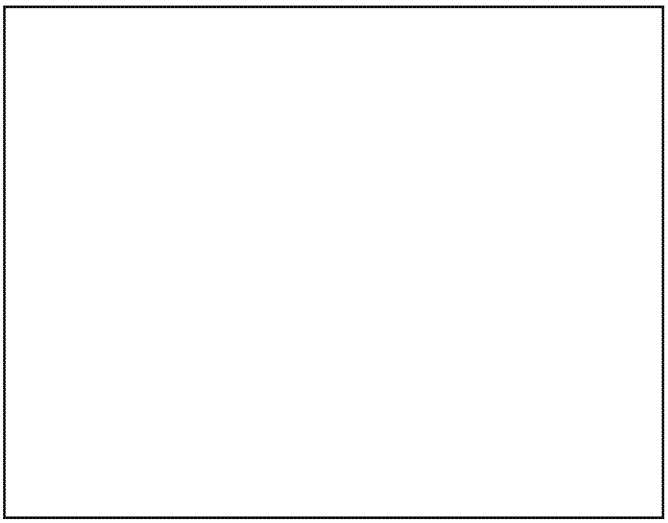
Cascade Corner

Cascade is pleased to announce the acquisition of Panther Technologies, Inc. (Panther) including the assets and proprietary technologies of GeoSierra Environmental, Inc. (GeoSierra).

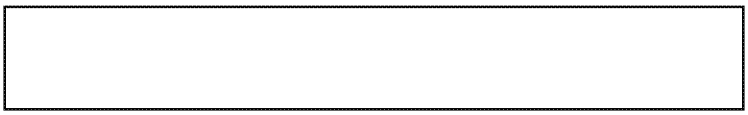
Headquartered in Medford, NJ, Panther provides in-situ and ex- situ remediation technologies to environmentally contaminated sites for industrial clients and consultants. The company's remediation services include conventional and innovative soil and groundwater remediation, hazardous and non-hazardous waste management and disposal, industrial landfill capping and lagoon closures, and mechanical system installations.

"Panther's expertise in the field implementation of chemical oxidation, reduction, and technology programs combined with GeoSierra's patented ground water reactive wall technology is a natural fit," said Timothy Smith, CEO of Cascade. *"Panther brings a unique approach to in situ and ex situ remediation of both organics and inorganics which complements Cascade's Combined Remedies™ approach by further expanding technologies available to help clients achieve their remediation objectives,"* said Smith. *"Every remediation situation is unique. Offering a full range of investigation and remediation capabilities allows Cascade to truly collaborate with our clients."*



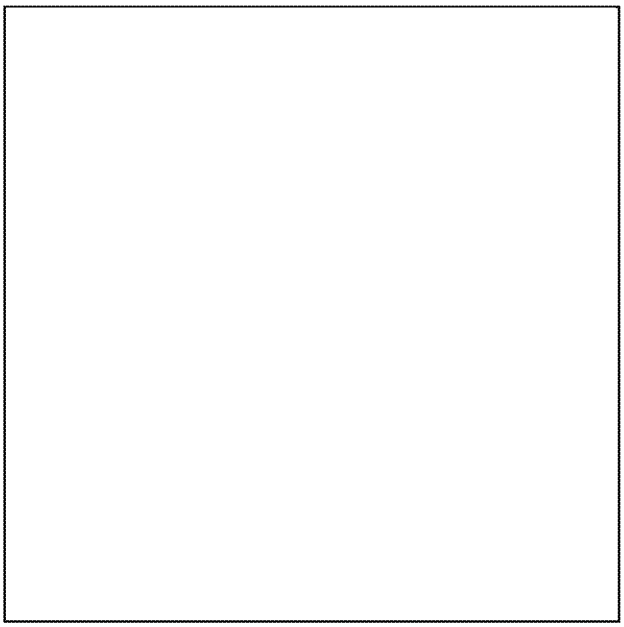


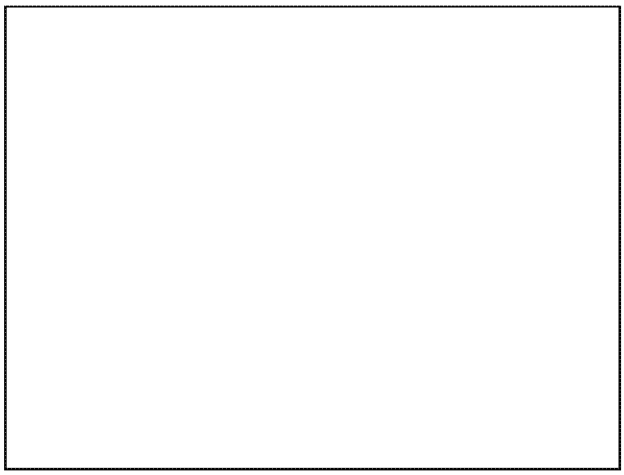
News from our European Partner, Krüger A/S



In previous newsletters we have shown projects ranging from a chemical landfill in Switzerland with higher boiling compounds like chlorobenzenes, 4-Choloro-5-methylanlilin to PCE remediation in low fractured granite in Sweden treated with Thermal Conductive Heating (TCH).

Moving back to our home country, Denmark, we are now in the process of installing a TCH site in Copenhagen. The geology on the site is dominated by clay, silt and sand. The contaminants of concern are primarily TCE and remedial target is 0.1 mg/kg DM. Most of the contaminated site is located beneath an old two story building and a neighboring house. The two story building houses different companies including a book printing shop and medical lab. These have to stay in operation during remediation with as little disturbance as possible.





The foundation of the three story building has been evaluated not to be placed on deposits strong enough to handle potential subsidence. Due to this, parts of the building will have the foundation extended deeper into geological settings capable of carrying the weight of the house even with subsurface thermal heating.

We decided to use TCH for this site due to its versatile use and flexibility. The target treatment zone with its multiple depths demands a system as flexible as TCH where we can have individual length on all heater wells if needed. Heating and vaporizing contaminants beneath a building with people working in it requires a very secure and robust extraction approach. Using TCH, contaminants and steam are driven towards the more permeable zones along the heater wells. Installing co-located extraction screens on all heater wells makes the most robust extraction. This approach has been used and proven on several sites.

For further information please do not hesitate to visit our website Krüger Veolia Thermal Soil Remediation or contact Niels Ploug at nip@kruger.dk.

You will also find us presenting at "Contamination Expo Series 2016" Excel 2016 London. You can also visit our booth at the Expo.

Project Updates

Southern California 1
TerraTherm is currently near the end of the demobilization phase of a combined Thermal Conductive Heating (TCH) and Steam Enhanced Extraction (SEE) remedy in Southern California. The TCH/SEE system removed over 22,000 lbs of total mass. Demobilization will be completed in September, 2016.

Confidential Northeast
ERH treatment continues at a confidential Northeast site with subsurface temperatures ranging from 60 to greater than 100 degrees Celsius. Mass recovery to date has exceeded the initial mass estimate by more than 230%. Inlet concentrations have started to decline.

Poughkeepsie NY
ERH treatment continues at a confidential NY site. Subsurface temperatures in the 38,000 ft^2 TTZ range from 50 to over 100 degrees Celsius. Operations are expected to continue into the spring of 2017.

Elkton, MD
Confirmatory sampling is on-going. Shut down of the thermal remedy is expected by the end of September or the first week in October. Demob would begin approximately 10-14 days after shut down.

Confidential Southeast
TerraTherm and Cascade have begun the wellfield installation for a Steam Enhanced Extraction (SEE) pilot test at a confidential Southeast site. Pilot test system construction is anticipated to be complete by late-October 2016 with pilot test operations immediately following. The four-week pilot test operations period will provide data that will be used to enhance the design for the full scale SEE remediation being considered for the site.

Confidential Midwest
ISTR system construction is underway at an active manufacturing facility in the Midwest. The target treatment zone for the site is located both inside and outside of the active facility. TerraTherm and Cascade began ISTR well installation in August 2016 and plan to complete the well installation by the end of September 2016. ISTR system construction is scheduled to be complete in November 2016.

Get To Know Us - Jack Wattu

Jack Wattu, TerraTherm's Principal Civil Engineer/Project Manager, has over 25 years of experience in the fields of civil and environmental engineering and construction project management. Jack, a Professional Engineer licensed in the states of Massachusetts and New Hampshire joined TerraTherm in 2014.

Jack has provided engineering and project management for various remediation projects on petroleum, chlorinated solvent and MGP waste contaminated sites. Jack's environmental experience includes design, implementation, and operation of soil vapor extraction, air sparging, multi-phase extraction, groundwater pump and treat systems and thermal remediation projects.

As the Civil Engineering Discipline Lead, Jack is responsible for designing and approving the Civil portions of TerraTherm's thermal remediation projects including grading, drainage and insulating surface covers.

In Case You Missed It...

The Zweig Letter, President Profile - John Bierschenk: Right place, right time The exclusive rights to a new technology launched TerraTherm into a world of contamination - and that's right where John Bierschenk wanted to be...

Think Thermal: The Blog - How TerraTherm's ThinkThermal Website and Data Plotter Connect Clients with Real Time Data
Thermal projects are quick - we often heat and treat a site in less than 6 months. It is crucial to be on top of all the data and know when it is time to stop, or when to collect confirmatory samples to...

Introducing the IPTD Heated-Box (HB)1100
- a new thermal remediation approach for on-site treatment of contaminated soils and sediments

Think Thermal: The Blog - Achieving Work-Life Balance -
I think most of us work to earn money to pay the bills. How much of our time is devoted to this effort? It is reasonable that a comfortable "balance" exists between work and personal life but just what does that mean? To me it means a stress free...

Cascade Conversation Q2 Newsletter Welcome to Cascade Conversation. As the name implies, this quarterly newsletter is designed to spark a conversation between our company, our clients and fellow...

TerraTherm, Inc. and ESMI Companies Partner to Introduce a New On-Site Thermal Remediation Technology-
TerraTherm, Inc. and ESMI Companies are excited to announce the introduction of an innovative remediation technology, capable of treating material with a broad variety of organic contaminants to exceptionally low ...

[redacted]

TerraTherm, Inc., 151 Suffolk lane, Gardner, MA 01440